

Amendments to the Claims:

Please amend the claims as follows:

1. (Original) A method for electrosurgically sealing tissue, comprising the steps of:

applying a first pulse of RF energy to the tissue; and

applying at least one subsequent RF energy pulse to the tissue and varying RF energy parameters of individual pulses of subsequent RF energy pulses in accordance with at least one characteristic of an electrical transient that occurs during the individual pulses of the subsequent RF energy pulses.

2. (Original) A method as in claim 1, wherein the step of applying the first pulse includes a step of selecting characteristics of the first pulse so as not to appreciably heat the tissue.

3. (Original). A method as in claim 1, wherein the step of applying the first pulse comprises the steps of:

continuously measuring at least one characteristic of a response of the tissue to the applied first pulse; and

in accordance with the measured characteristic, determining whether to change a set of RF energy parameters to a default set of RF energy parameters.

4. (Original) A method as in claim 3, wherein the default set of RF energy parameters comprise a magnitude of a starting power and a magnitude of a starting voltage.

5. (Original). A method as in claim 1, wherein the electrical transient is an electric current transient.

6. (Original). A method as in claim 5, wherein the at least one characteristic of said electrical transient is a rate of change of the electric current transient.

7. (Original). A method as in claim 1, wherein the electrical transient is tissue impedance and the at least one characteristic of said electrical transient is a rate of change of the tissue impedance.

8. (Original) A method as in claim 1, wherein the RF energy parameters that are varied for individual pulses of the subsequent RF energy pulses comprise RF power output, current and voltage.

9. (Original) A method as in claim 1, further comprising the step of determining if the tissue responded to the first pulse of RF energy prior to the step of applying at least one subsequent RF energy pulse.

10. (Original) A method as in claim 9, wherein the step of applying at least one subsequent RF energy pulse includes the step of varying at least one of RF starting power, a magnitude of starting current, and a magnitude of starting voltage for the at least one subsequent RF energy pulse.

11. (Original) A method as in claim 1, further comprising the steps of:
measuring the at least one characteristic of the electrical transient that occurs at the end of one of the first pulse and the at least one subsequent RF energy pulse;
in accordance with the measured characteristic, determining whether to terminate the method for electrosurgically sealing tissue, or using the measured characteristic to determine a set of RF energy parameters for a subsequent RF energy pulse and repeating the applying step.

12. (Original) A method as in claim 11, wherein the set of RF energy parameters for the subsequent RF energy pulse comprise a magnitude of a starting RF power, a magnitude of a starting current, a magnitude of a starting voltage, and a duty cycle.

13. (Original). A method as in claim 11, wherein the electrical transient is an electrical impedance of the tissue.

14. (Original) A method as in claim 13, wherein the step of using the measured characteristic to determine the set of RF energy parameters for the

subsequent RF energy pulse comprises a step of using the measured impedance value to readout the set of RF energy parameters from an entry in one of a plurality of lookup tables.

15. (Original) A method as in claim 10, wherein said one of the plurality of lookup tables is selected manually or automatically, based on a choice of an electrosurgical tool or instrument.

16. (Original). A method as in claim 3, further comprising the step of modifying predetermined pulses of the set of RF energy parameters in accordance with a control input from an operator.

17. (Original). A method as in claim 16, wherein the predetermined pulses of the set of RF energy parameters that are modified comprise a pulse power and a pulse starting voltage.

18. (Original) A method as in claim 1, further comprising the step of terminating a generation of subsequent RF energy pulses upon a determination that the electrical transient is absent.

Claims 19-27 (Cancelled)

28. (Withdrawn) A system for electrosurgically sealing tissue comprising:

means for applying a first pulse of RF energy to the tissue;
means for measuring at least one electrical characteristic of the tissue in response to the applied first pulse of RF energy; and
means for applying at least one subsequent RF energy pulse to the tissue and keeping constant or varying RF energy parameters of individual pulses of further subsequent individual RF energy pulses in accordance with at least one characteristic of an electrical transient that occurs during the individual RF energy pulses, said RF energy parameters of said at least one subsequent RF energy pulse being kept constant or varied according to the at least one measured electrical characteristic of the tissue in response to the applied first pulse of RF energy, said electrical transient is selected from the group consisting of an electric current transient and a tissue impedance, such that said system can electrosurgically seal tissue with and without measuring tissue impedance.

29. (Withdrawn) A system as in claim 28, wherein the means for applying the first pulse includes means for selecting characteristics of the first pulse so as not to excessively heat the tissue.

30. (Withdrawn) A system as in claim 28, wherein the means for applying the first pulse comprises:

means for continuously measuring at least one characteristic of a response of the tissue to the applied first pulse; and

means for determining whether to change a set of RF energy parameters, in accordance with the measured characteristic.

31. (Withdrawn) A system as in claim 30, further comprising a default set of RF energy parameters selected from the group consisting of a magnitude of a starting power, a magnitude of a starting voltage, a magnitude of a starting current, and pulse width.

32. (Withdrawn) A system as in claim 28, wherein the electrical transient is selected from the group consisting of an electric current transient and tissue impedance.

33. (Withdrawn) A system as in claim 28, wherein the at least one characteristic of the electrical transient is selected from the group consisting of a rate of change of an electric current transient, a rate of change of the tissue impedance, and phase rotation of voltage and current.

34. (Withdrawn) A system as in claim 28, wherein the at least one characteristic is selected from the group consisting of a current value, a voltage value, a current phase angle, and a tissue impedance value.

35. (Withdrawn) A system as in claim 28, wherein the RF energy parameters that are varied for individual pulses of the RF energy pulses are selected from the group consisting of RF power output, current, voltage, pulse width and duty cycle.

36. (Withdrawn) A system as in claim 28, further comprising means for determining if the tissue responded to the first pulse of RF energy prior to activating the means for applying at least one subsequent RF energy pulse.

37. (Withdrawn) A system as in claim 36, wherein the means for applying at least one subsequent RF energy pulse includes means for varying at least one of RF starting power, a magnitude of starting current, pulse width, and a magnitude of starting voltage for the at least one subsequent RF energy pulse.

38. (Withdrawn) A system as in claim 28, further comprising:

means for measuring the at least one characteristic of the electrical transient that occurs at the end of the first pulse and subsequent RF energy pulses;

means for determining whether to terminate the system for electrosurgically sealing tissue, in accordance with the measured characteristic; and

means for using the measured characteristic to determine a set of RF energy parameters for a subsequent RF energy pulse if the means for determining determines not to terminate the system for electrosurgically sealing tissue.

39. (Withdrawn) A system as in claim 38, wherein the set of RF energy parameters for the subsequent RF energy pulse comprise a magnitude of a starting RF power, a magnitude of a starting current, a magnitude of a starting pulse width, a magnitude of a starting voltage, and a duty cycle.

40. (Withdrawn) A system as in claim 38, wherein the electrical transient is an electrical impedance of the tissue.

41. (Withdrawn) A system as in claim 38, wherein the means for using the measured characteristic to determine the set of RF energy parameters for the subsequent RF energy pulse comprises means for using the measured at least one characteristic to readout the set of RF energy parameters from an entry in one of a plurality of lookup tables.

42. (Withdrawn) A system as in claim 41, wherein said one of the plurality of lookup tables is selected manually or automatically, based on a choice of an electrosurgical tool or instrument.

43. (Withdrawn) A system as in claim 30, further comprising means for modifying predetermined parameters of the set of RF energy parameters in accordance with a control input from an operator.

44. (Withdrawn) A system as in claim 28, further comprising means for combining an RF energy pulse with at least one subsequent RF energy pulse.

45. (Withdrawn) A system as in claim 28, further comprising means for terminating a generation of subsequent RF energy pulses upon a determination that the electrical transient is absent.

46. (Withdrawn). A system for electrosurgically sealing tissue comprising:
means for applying a first pulse of RF energy to the tissue;
means for measuring at least one electrical characteristic of the tissue in response to the applied first pulse of RF energy; and
means for applying at least one subsequent RF energy pulse to the tissue and controlling RF energy parameters of individual pulses of further subsequent individual RF energy pulses in accordance with at least one characteristic of an electrical current transient that occurs during the individual RF energy pulses, said RF energy parameters of said at least one subsequent RF energy pulse being controlled according to the at least one measured electrical characteristic of the tissue in response to the applied first pulse of RF energy, wherein said means for applying at least one subsequent RF energy pulse to the tissue and controlling RF energy parameters of individual pulses of further subsequent individual RF energy pulses allows said system to electrosurgically seal tissue without measuring tissue impedance.

47. (Withdrawn) A system as in claim 46, wherein the means for applying the first pulse includes means for selecting characteristics of the first pulse so as not to excessively heat the tissue.

48. (Withdrawn) A system as in claim 46, wherein the means for applying the first pulse comprises:

means for continuously measuring at least one characteristic of a response of the tissue to the applied first pulse; and

means for determining whether to change a set of RF energy parameters, in accordance with the measured characteristic.

49. (Withdrawn) A system as in claim 48, further comprising a default set of RF energy parameters selected from the group consisting of a magnitude of a starting power, a magnitude of a starting voltage, a magnitude of a starting current, and pulse width.

50. (Withdrawn) A system as in claim 46, wherein the at least one characteristic is selected from the group consisting of a current value, a voltage value, a current phase angle, and a tissue impedance value.

51. (Withdrawn) A system as in claim 46, wherein the RF energy parameters that are varied for individual pulses of the RF energy pulses are selected from the group consisting of RF power output, current, voltage, pulse width and duty cycle.

52. (Withdrawn) A system as in claim 46, further comprising means for determining if the tissue responded to the first pulse of RF energy prior to activating the means for applying at least one subsequent RF energy pulse.

53. (Withdrawn) A system as in claim 52, wherein the means for applying at least one subsequent RF energy pulse includes means for varying at least one of RF starting power, a magnitude of starting current, pulse width, and a magnitude of starting voltage for the at least one subsequent RF energy pulse.

54. (Withdrawn) A system as in claim 46, further comprising:

means for measuring the at least one characteristic of the electrical current transient that occurs at the end of the first pulse and subsequent RF energy pulses;

means for determining whether to terminate the system for electrosurgically sealing tissue, in accordance with the measured characteristic; and

means for using the measured characteristic to determine a set of RF energy parameters for a subsequent RF energy pulse if the means for determining determines not to terminate the system for electrosurgically sealing tissue.

55. (Withdrawn) A system as in claim 54, wherein the set of RF energy parameters for the subsequent RF energy pulse comprise a magnitude of a starting RF power, a magnitude of a starting current, a magnitude of a starting pulse width, a magnitude of a starting voltage, and a duty cycle.

56. (Withdrawn) A system as in claim 54, wherein the means for using the measured characteristic to determine the set of RF energy parameters for the subsequent RF energy pulse comprises means for using the measured at least one characteristic to readout the set of RF energy parameters from an entry in one of a plurality of lookup tables.

57. (Withdrawn) A system as in claim 56, wherein said one of the plurality of lookup tables is selected manually or automatically, based on a choice of an electrosurgical tool or instrument.

58. (Withdrawn) A system as in claim 48, further comprising means for modifying predetermined parameters of the set of RF energy parameters in accordance with a control input from an operator.

59. (Withdrawn) A system as in claim 46, further comprising means for combining an RF energy pulse with at least one subsequent RF energy pulse.

60. (Withdrawn) A system as in claim 46, further comprising means for terminating a generation of subsequent RF energy pulses upon a determination that the electrical current transient is absent.